



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,310	04/13/2004	Shuji Kajinuma	21334-1319	4767
29450	7590	09/20/2004	EXAMINER	
BARLEY SNYDER, LLC 1000 WESTLAKES DRIVE, SUITE 275 BERWYN, PA 19312			TA, THO DAC	
			ART UNIT	PAPER NUMBER
			2833	

DATE MAILED: 09/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/823,310	Applicant(s) KAJINUMA ET AL. <i>AK</i>	
	Examiner Tho D. Ta	Art Unit 2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,7 and 8 is/are rejected.
- 7) ☒ Claim(s) 2-6 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/13/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claim Objections

1. Claims 7 and 8 are objected to because of the following informalities: claim 7, lines 2 and 3, the recitation "the base portions" lacks antecedent basis. Appropriate correction is required.

2. Claim 8 is objected to because they include reference characters which are not enclosed within parentheses.

Reference characters corresponding to elements recited in the detailed description of the drawings and used in conjunction with the recitation of the same element or group of elements in the claims should be enclosed within parentheses so as to avoid confusion with other numbers or characters which may appear in the claims. See MPEP § 608.01(m).

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1 is rejected under 35 U.S.C. 102(e) as being anticipated by Whyne et al. (US 2003/0092304 A1).

Art Unit: 2833

In regard to claim 1, Whyne et al. discloses a ball grid array IC socket, comprising: an insulative housing 1 having an IC package mounting surface on one face thereof and a circuit board mounting surface on a face opposite the IC package mounting surface and a plurality of contact housing apertures 44 extending from package mounting surface the circuit board mounting surface and configured to receive a plurality contacts 3; the contacts 3 including contact arms 24 that protrude from the first surface in a unidirectionally bent manner for contacting contact portions 5 of an IC package mounted on the IC package mounting surface, fixing portions 12 for engaging the interiors of the plurality of contact housing apertures 44, solder ball pads 62 that protrude from the circuit board mounting surface for soldering solder balls thereto for connecting to a circuit board, and transition portions (see attached drawing) provided between the fixing portions 12 and the solder ball pads 62 for displacing the solder ball pads 62 substantially the same direction as the direction in which the contact arms 24 are bent.

3. Claims 1, 7, 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Shirai et al. (US 2004/0058580 A1).

In regard to claim 1, Shirai et al. discloses a ball grid array IC socket 120, comprising: an insulative housing 110 having an IC package mounting surface on one face thereof and a circuit board mounting surface on a face opposite the IC package mounting surface and a plurality of contact housing apertures 111 extending from package mounting surface the circuit board mounting surface and configured to receive

Art Unit: 2833

a plurality contacts 71; the contacts 71 including contact arms 76 that protrude from the first surface in a unidirectionally bent manner for contacting contact portions 131 of an IC package 130 mounted on the IC package mounting surface, fixing portions 72 for engaging the interiors of the plurality of contact housing apertures 111, solder ball pads 80 that protrude from the circuit board mounting surface for soldering solder balls thereto for connecting to a circuit board 140, and transition portions 81 provided between the fixing portions 72 and the solder ball pads 80 for displacing the solder ball pads 72 substantially the same direction as the direction in which the contact arms 76 are bent.

In regard to claim 7, Shirai et al. discloses that the contact arms 76 are bent from a side edge of the base portions 77 at a bend and extend upward from the bend.

In regard to claim 8, Shirai et al. discloses that the contact arms 76 have an arcuate upper surface 79 for connecting with the contacts 131 of the IC package 130 at the distal ends of the contact arms 76.

Allowable Subject Matter

4. Claims 2-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2833

5. The following is a statement of reasons for the indication of allowable subject matter: In regard to claim 2, the prior art fails to disclose, teach or suggest the transition portions comprise fillet stops for preventing fillets from forming on the transition portions during soldering of the solder balls on the solder ball pads; and in combination with other limitations of the base claim and any intervening claims. In regard to claim 5, the prior art fails to disclose, teach or suggest the housing comprises protrusions that extend from the circuit board mounting surface to the ends of the solder for preventing fillets from forming on the transition portions during soldering of the solder balls on the solder ball pads; and in combination with other limitations of the base claim and any intervening claims. In regard to claim 6, the prior art fails to disclose, teach or suggest the solder ball pad is of a discoid shape having a diameter slightly smaller than that of the solder ball; and in combination with other limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tho D. Ta whose telephone number is (571) 272-2014. The examiner can normally be reached on M-F (8:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on (571) 272-2800 ext 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2833

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



THO D. TA
PRIMARY EXAMINER